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**IS THERE A FUTURE ROLE FOR TACTICAL NUCLEAR WEAPON SYSTEMS IN THE NATIONAL MILITARY STRATEGY?**

**AN INDIVIDUAL STUDY PROJECT**

**by**

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## ABSTRACT

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The disintegration of the Former Soviet Union and the demise of the Warsaw Pact as significant threats to national security allowed President Bush to promulgate new defense policy initiatives impacting nuclear force capabilities and roles. Because of this threat reduction and domestic challenges, the United States' armed services will undergo significant downsizing in the next several years. This will affect the force structure needed in the National Military Strategy (NMS) to insure attainment of national security policy objectives while minimizing risk. Planning the size and capabilities of the future force structure is complicated because of uncertainties in discerning new emerging nuclear-capable threats.

This paper reviews the purpose and role that tactical nuclear weapon systems can provide in supporting the NMS, and recommends requirements be determined using a strategy based upon political, economic and military national interests versus the current target-based strategy. To draw implications for the NMS, the analysis reviews current strategic policy guidance, summarizes the current definition of deterrence theory, and provides rationales for maintaining tactical nuclear weapon systems for deterrence and warfighting in regional contingency operations against nuclear-capable forces. Based upon this analysis, recommendations are provided for joint planning, doctrine, and training initiatives needed to enhance the efficacy of the armed services in achieving national security policy objectives.

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## INTRODUCTION

The strategic environment is characterized by volatility, uncertainty, complexity, ambiguity, possibilities and opportunities.<sup>1</sup> Strategic leaders not only have to confront this reality, but they also have to make significant decisions pertaining to national security. The internal decay and disintegration of the Former Soviet Union (FSU) and the demise of the Warsaw Pact have raised myriad issues as to the threat and the future need for strategic and tactical nuclear weapon systems (TNWS). The proliferation of ballistic missile technology and of nuclear, chemical and biological weapons of mass destruction has created political, economic and military questions, raising concerns on how to combat this new issue that threatens U.S. national security.

National military strategy (NMS) and the implementing force size and composition needed to minimize national security risk are complicated by these issues. Even in this murky environment, many Congressional members are demanding significant reductions in the DOD budget to provide a "peace dividend" to address many pressing domestic issues, or threats at home, including health care, unemployment, poverty and decay in our transportation infrastructure and urban areas. Leaders in the Congress and in the executive branch are having difficulty in discerning a postulated threat, questioning the need for future weapon systems. The armed services will continue to face severe budget reductions impacting force structure, readiness, and the ability to sustain combat operations needed to implement the NMS. Senator Nunn recently wrote:

Today America faces significant technological, economic, political, and social challenges in the national security environment. Our twin trade and

**budget deficits, unless addressed quickly, will jeopardize our ability to fund national security needs.<sup>2</sup>**

This paper will review the purpose and future role of TNWS in supporting the NMS. To draw implications for the NMS in support of national security, the analysis includes a review of current strategic policy guidance; summarizes the current definition of deterrence theory; describes the need for a strategy based on national interests *versus* a target-based strategy for determining TNWS requirements; and finally, reviews the future role of TNWS for warfighting. Suggested reasons for changing from a target-based strategy as outlined in the Joint Strategy Review to a strategy based on national interests including political, economic and military rationales in maintaining TNWS are provided. Characteristics of limited wars and concerns for escalatory control if TNWS are used for warfighting are discussed. The theory of "just war" criteria and justification for planning the use of TNWS are explained. Based upon this analysis, recommendations are provided for joint planning initiatives to enhance national security.

## **DISCUSSION**

Military strategy is generally considered to be the art and science of employing armed force to secure national policy objectives by the application of force or the threat of force. For the purpose of this paper, to develop the NMS it is necessary to review national policy guidance. The President promulgated that guidance in his speech in Aspen, Colorado on August 2, 1990, and in his televised speech on September 27, 1991. At Aspen he stated the strategic environment has changed because the Soviet invasion

threat to Western Europe with little or no warning is at its lowest point in the postwar period, and the menace of global war has diminished.

Because of these emerging realities, President Bush said U.S. armed forces will be downsized approximately 25%, resulting in a strategy of "forward presence" in key areas and "restructuring" those forces to respond to the needs of regional contingencies. He also said the Soviet strategic nuclear offensive capability is immense and continues to undergo modernization. Therefore, an enduring reality is the Soviet Union continues to be capable of destroying the U.S. in a single devastating attack.<sup>3</sup> Additionally, he stated the proliferation of weapons of mass destruction is an emerging threat.

In his televised speech, President Bush promulgated new deterrence policy initiatives impacting tactical nuclear forces. The President unilaterally directed the Army to retire all TNWS from its short-range nuclear force (SNF); the Navy to retire, or to withdraw and store in CONUS depots, all surface SNF and TOMAHAWK cruise missile TNWS; and the Air Force to cancel development of its new strategic air-to-surface missile.<sup>4</sup> In effect, the Army will become a nonnuclear service<sup>5</sup> in a few years, and the Navy<sup>6</sup> will no longer have a mission to respond rapidly in meeting potential warfighting requirements for TNWS. The Air Force<sup>7</sup> will remain the only service capable of quickly supporting ground forces in future regional conflicts with deterrent, and if necessary, warfighting, TNWS.<sup>8</sup>

However, with further budget reductions, the Navy may attempt to eliminate its TNWS role since, "The mainstream Navy has, for the most part, rejected nuclear warfare

as irrelevant to the kind of navy and naval forces it cares most about."<sup>9</sup> Over the years, the Navy has been downsizing its short-range and air-delivered nuclear forces.<sup>10</sup>

Based upon the demonstrated precision bombing capability of U.S. air forces during Desert Storm along with the political uncertainty associated with the release and use of nuclear weapons, should the U.S. eliminate all TNWS in favor of conventional munitions, or will TNWS also have a role in the NMS? Before embarking on an analysis of this issue, it is necessary to review deterrence theory. Modern deterrence theory is a "psychological phenomenon" with two interconnecting parts. Deterrence consists of the "hard capability" to carry out the threatened response and the "will" to conduct the threatened response.<sup>11</sup> Colin Gray further states "...a credible determination to fight might avail little if the quantity and quality of combat power threatened falls short of some critical threshold of effect as seen by the intended deterrees."<sup>12</sup> Modern deterrence theory assumes a rational, informed opponent who will calculate the risks involved to determine if using military force to obtain political objectives is worth the possible consequences. An irrational opponent who will accept destruction based upon faulty logic or behavior in determining risk cannot be "deterring"<sup>13</sup> in the traditional sense.

Strategic nuclear deterrence policy has evolved over the past 40 years. It is currently based upon the "assured destruction" concept which embodies the mutual understanding that neither the FSU nor the U.S. possesses a destabilizing "first strike" capability using land based ICBMs, sea based SLBMs, or strategic bombers.

Fortunately, Soviet leadership has been rational, and strategic nuclear deterrence has been successful in preventing global nuclear war. Tactical nuclear weapons are a part of nuclear deterrence policy. U.S. flexible response policy, existing in NATO since 1967, provides the President with the means (TNWS) and the ways (appropriate firepower, or limited nuclear options (LNO)) to halt enemy offensive actions.

Traditionally, Warsaw Pact conventional forces have had an advantage over NATO forces in striking power, firepower and number of divisions.<sup>14</sup> Starting in the 1950s, the U.S. positioned TNWS in several NATO countries to compensate for smaller conventional forces. Consequently, TNWS have primarily provided deterrence in preventing a Warsaw Pact invasion of Western Europe. The probability of TNWS use resulting from the U.S. stated policy of "not precluding first use" in thwarting a Warsaw Pact invasion must have heightened Soviet leadership concerns for escalation to strategic nuclear war.<sup>15</sup> Again, deterrence worked at the tactical nuclear level because the opposing leadership was rational in its planning and analysis.

The demise of the Warsaw Pact and the ongoing removal of FSU conventional forces from Eastern Europe have raised uncertainty over the future need for TNWS in general since the preponderance of TNWS were positioned in NATO. Many strategists believe deterrence can now be achieved solely with conventional forces. Conventional force deployments can provide "flexible response" deterrence between nuclear powers allowing for nuclear and nonnuclear levels of conflict.<sup>16</sup>

This leads to questions over the ways (nuclear or conventional, or both) for countering the uncertain future threats to national security. Our future strategic deterrent force in the NMS must allow for the potential threat from nations acquiring weapons of mass destruction and the ballistic missiles to deliver those weapons. Western countries and the People's Republic of China (PRC) continue to sell the technology and expertise for developing nuclear weapons and ballistic missiles. "Nuclear proliferation, though not nearly so rapid thus far as many had feared, continues apace."<sup>17</sup> Potentially unstable nuclear-capable countries are Argentina, Brazil, Chile, Egypt, Iran, Iraq, Libya, Nigeria, Pakistan,<sup>18</sup> South Korea, and Syria.<sup>19</sup> In addition, the President has stated that as many as 15 developing nations could have their own ballistic missiles by the year 2000.<sup>20</sup> Ballistic missiles carrying weapons of mass destruction could easily be targeted against friendly forces in regional conflicts. Cline states:

American strategy must also face up to the unwelcome idea that being able to fight with nuclear weapons is the best way, maybe the only way, to avoid war. Unilateral disarmament has never been a winning strategy....The capability for last-resort use of military weapons is a psychological factor of great effect in perceptions of strength.<sup>21</sup>

Potential nuclear threats to national security may come from nations with rational or irrational leaders, many of whom may not share American, or Judeo-Christian values.<sup>22</sup> Dunn advises:

However, while little new equipment may have to be procured to handle the small-power nuclear threat, it is wrong to conclude that there would be no unique tactical, training, intelligence, and other requirements for dealing with that lesser threat. Failure to take seriously the need to identify and meet these requirements will gravely hinder efforts to protect U.S. interests in these newly nuclearized conflict-prone regions.<sup>23</sup>

These emerging threats and uncertainty over the future status of the FSU and PRC nuclear arsenals are real despite Congressional calls for further reductions in force structure impacting the NMS which add risk in securing national security objectives.

The U.S. has pursued bilateral and multilateral arms control agreements<sup>24</sup> to prevent the proliferation of nuclear weapons and to remove or reduce those Soviet nuclear forces that were destabilizing. These agreements were beneficial in lowering the possibility of nuclear war by discouraging proliferation, by restricting the number of nuclear systems and by enhancing stability through deterrence. The President furthered arms control objectives<sup>25</sup> by announcing unilateral reductions in nuclear weapons based upon trust and without verification.

Considering the previous agreements and announcements, the questions become: what should be the purpose and future role of TNWS in the NMS? Is there a need for TNWS in light of precision guided munitions technology? Is there a role for TNWS in the NMS for both deterrence and warfighting? Against which threats should TNWS be planned? Should TNWS in the NMS be based upon national interests *versus* targets? These are profound questions; the answers to which will have an enormous effect not only on the budget, but also, on the NMS including the future size and mix of the force structure as well as the future need for TNWS. Based upon the President's announcements, an historic change in the armed services' nuclear roles is in the offing. But, is it realistic to expect total elimination of TNWS?

In the past, TNWS requirements were primarily determined using the existing and postulated Communist threat forces in the different theaters of operations, with emphasis on battle in Central Europe. The methodology for determining TNWS requirements was based on projected and known fixed, mobile and maritime targets. Now, many former fixed targets no longer exist; mobile targets of massed forces that could threaten the West with little warning time have diminished significantly; and maritime targets can be eliminated satisfactorily with advanced conventional munitions.

Therefore, currently there is a policy and capabilities<sup>26</sup> mismatch. With the decline in the risk posed by the FSU threat, U.S. TNWS capabilities exceed national security policy goals. To be in consonance with political objectives, the NMS needs reformulation and TNWS arsenals need downsizing to better align capabilities with national security strategy objectives. A target-based strategy for TNWS requirements is meaningless and non-defendable for most hypothetical scenarios against the FSU. A strategy based on national interests makes sense from political, economic and military viewpoints, in light of the denouement of the former Soviet threat.

What is a strategy based on national interests? Before discussing national interests, it is necessary to discuss how the NMS is developed. National values determine national interests and include survival, justice, freedom, maintenance of a democratic society, prosperity, prestige, and the promotion or protection of a nation's ideology.<sup>27</sup> National interests are specific objectives toward which national policy can be aimed.<sup>28</sup> National policy objectives include the four elements of national power:

political, economic, information and military. National policy is established by the executive branch and is determined after an analysis of the elements of national power including their interrelationships and perceived priorities. Domestic and global factors play varying roles in the analysis depending upon the current and expected political, economic, socio-psychological and military situations. From national policy objectives, the National Security Strategy (NSS) is formulated; from the NSS, the NMS is developed. The NMS includes the forces and capabilities, both conventional and nuclear, needed to achieve the military component of national security policy objectives.

National interests are also a result of relating national values to the domestic and international environments. Joint Pub 1 states, "We must be prepared to defend our national interests in every type of terrain and state of sea and air, from jungles, deserts, and tropical seas to polar ice caps."<sup>29</sup> Kaufman, *et al.*, discuss national interests:

First, ... they [national interests] are important only if they contribute to the achievement of national values....Second, interests, like values, can conflict with each other and need to be reconciled by determining priorities and by making acceptable compromises. Third, policy is often justified as protecting vital interests, which are those interests that relate to the most important values....<sup>30</sup>

But, does the U.S. need future TNWS in a strategy based upon national interests? National values include the survival and security of the nation, resulting in the first national interest: continued nuclear deterrence and prevention of the proliferation of nuclear weapons. The FSU and PRC nuclear threats are real and enduring; however, who can predict, even with modest success, which Third World countries will acquire a nuclear capability and will be led by irrational leaders? Ostensibly, TNWS will continue

to have a major role in deterring the FSU and PRC tactical nuclear forces that will continue to exist. According to Cline, "As long as the government in Peking remains a Soviet-style one-party dictatorship, it will be an adversary,... of the people of the world."<sup>31</sup> Tow further warns:

While China's nuclear buildup was previously directed primarily toward the Soviet threat, U.S. defense planners will increasingly need to weigh the PRC's growing and increasingly diversified nuclear arsenal's effect on other aspects of the Asia-Pacific's regional power balance: i.e., growing Indian maritime power projection into Southeast Asia, various levels of Japanese rearmament, and Beijing's own efforts to promote its naval power in the East China Sea and beyond.<sup>32</sup>

Applying the ends, ways, and means model to this discussion - TNWS (means) can offer an element of nuclear deterrence (ways) to achieve one political objective (ends) in U.S. national interests: halting the spread of nuclear weapons as outlined in the NPT protocols. For example, TNWS can contribute to the security umbrella needed to protect South Korea from the recalcitrant, despotic regime of North Korea.<sup>33</sup> President Kim Il Sung seeks reunification on his terms; he has developed a vast, indigenous, clandestine program to acquire nuclear weapons.<sup>34</sup> He continues to deny constructing a plutonium reprocessing facility at Yongbyon, but he waffles on establishing definitive on-site inspection dates for the International Atomic Energy Agency as required by the NPT.<sup>35</sup>

Even though all nuclear weapons have been physically removed from the peninsula, U.S. TNWS in the NMS can still provide South Korea with a credible defense against a North Korean nuclear capability; or else, South Korea will eventually seek to protect itself against the destabilizing North Korean nuclear threat by acquiring its own

nuclear capability.<sup>36</sup> If South Korea acquires a nuclear weapon capability, it can be expected that Japan will also foresee a need to protect itself against the Korean nuclear threat because of the enmity existing between the two cultures.

In Europe, U.S. TNWS positioned on the continent demonstrate a continued commitment to the defense of Western Europe, even with the decline of the threat as formally known. The future of NATO is uncertain; the size and composition of U.S. forces in Europe, including the number and types of TNWS, is declining. Even though the target-based strategy for determining requirements cannot be justified in quantitative terms, a strategy based on national interests that positions TNWS in theater should obviate future German security concerns. Germany is surrounded by longtime former enemies, including the United Kingdom, France and the FSU. As Germany grows, it will become more competitive with other European nations. Without U.S. protection, German political leadership may believe acquiring a nuclear weapon capability is warranted to protect German sovereignty against these nuclear-capable neighbors. Germany could quickly become nuclear; our national policy, manifested in the NPT, would not be realized.

National values include prosperity, resulting in the second national interest: reducing the defense budget. Today, if a strategy based on national interests is adopted, TNWS can still provide an economic advantage in meeting national security needs by compensating for reductions in the defense budget.<sup>37</sup> In the past, TNWS have proven to be cheap when compared to the large conventional force structures that would have been

needed for deterrence and warfighting in offsetting the huge threat posed by Soviet and Warsaw Pact forces. Bleckman and Luttwak state:

The relatively cheap cost of nuclear weapons, as compared to conventional forces, allowed Western Europe to spend more on economic development in the 1940s and 1950s, without jeopardizing its security.<sup>38</sup>

Because of heavy reliance on nuclear forces in the fifties, President Eisenhower was the last President to balance the national budget,<sup>39</sup> but a costly arms race did ensue.

In the 1960s and 1970s, TNWS were used in Europe to counter the higher numerical advantages in Warsaw Pact armor, mechanized infantry and artillery forces, allowing for significant reductions in defense outlays for NATO countries. Record notes:

Budgetary rather than strategic considerations were in fact paramount in prompting the U.S. decision to deploy TNW[S] in Europe: TNW[S] offered a cheap means of offsetting the conventional force imbalance in Europe, an imbalance that neither the United States nor its NATO allies were politically or economically prepared to redress through requisite investment in costly conventional forces.<sup>40</sup>

In 1979, it cost approximately \$500 million annually to maintain 7000 tactical nuclear weapons in Europe.<sup>41</sup> Positioning TNWS in some NATO countries, particularly West Germany, was politically acceptable because of the economic benefits derived in allowing for smaller conventional forces. Also, leaders in many NATO countries believed the Soviets would never have risked invading because of escalatory problems after the introduction of TNWS<sup>42</sup> on the battlefield resulting in possible global nuclear war.

National values include prestige and promoting ideology, resulting in two national interests: protecting forces in regional conflicts and limiting nuclear war, if it breaks out. Deployed TNWS make sense in terms of a military deterrence and warfighting utility, if a

strategy based on national interests is adopted in achieving limited political objectives.<sup>43</sup> If political objectives are limited in nature, the conflict will also be limited in scope. For example, U.S. forces have engaged in three limited wars due to political constraints since World War II; Korea, Vietnam and the Persian Gulf.

Limited war may be characterized as a war limited in political objectives (ends), in forces used including the weapons (means), and in voluntary, self-imposed rules of conflict (ways) including no nuclear weapons, or TNW[S] only.<sup>44</sup> Tactical nuclear weapons can provide the means and LNO can be developed to provide the ways to achieve limited political objectives, adding risk factors to future decision-making by nuclear-capable adversaries. Regional conflicts, as briefed by the CJCS to the Congress, reflect new guidance in the NMS for planning the future force. The CJCS characterizes future wars as limited in nature.

Debate has continued since the dawn of the nuclear age over the use of TNWS in any limited use scenario because of fears that escalation would spiral out of control, resulting in global nuclear war with the Soviets. Smoke notes:

Wars have the potential of widening in geographic scope and involving additional nations (sometimes called horizontal escalation) or of becoming more intense in the tempo of events and the violence of weapons employed (vertical escalation).<sup>45</sup> Many have questioned the warfighting rationale for TNWS in Europe, believing that any use of TNWS as a "trip wire" in halting aggression would quickly elevate into a strategic nuclear exchange. Proponents of this line of thought generally believe in the "existential" deterrent value of TNWS, which is a belief that TNWS are needed only to deter; they

will not be used and should never be considered for use in doctrine. According to this school of thought, introduction of TNWS would lower the nuclear threshold; thus, enhance their use. Their massive destructive power and the lack of control in preventing escalation render TNWS "quiescent"; and developing doctrine for TNWS warfighting is abhorrent because political objectives could never justify the use of TNWS.

Another group of theorists posits nuclear deterrence is enhanced when a potential adversary knows that TNWS are accompanied with detailed planning and doctrine for their use in warfighting. "The very existence of a plausible warfighting doctrine enhances deterrence itself by conveying to potential adversaries a resolve to fight should deterrence fail."<sup>46</sup> Again, nuclear deterrence theory is based upon both the capability and credibility to use nuclear weapons; credibility is enhanced with plausible warfighting doctrine. Because of the heightened concerns of proliferation of nuclear weapons and of the continuing threat from the FSU and the PRC with their nuclear weapon stockpiles, this group believes the U.S. policy of declining to state "no first use" of TNWS should be continued. They also believe this policy adds uncertainty in calculating risk by potential, rational adversaries. "Nuclear weapons make it quite simple to create such uncertainty, amplifying as they do the well-established unpredictabilities of war as an instrument of state policy."<sup>47</sup> This policy has worked well in Europe over the past 40 years and reinforces a strategy based on national interests from a military standpoint. In summary, "...the best way to prevent war is to prepare for it."<sup>48</sup> But, can TNWS be used in the NMS for a purpose other than deterrence?

Leadership in the Soviet Union and PRC has been rational in its thinking, and deterrence has been effective in preventing the use of nuclear weapons. Unfortunately, irrational leadership, backed by nuclear weapons and supported by Communist dogma or ethnic, religious and nationalistic fervor, creates uncertainty in the future deterrent value of TNWS, resulting in a need to review their potential warfighting role. Jones states:

Although it seems self-evident that it would be potentially suicidal for a local state to launch a SNF attack on the military forces of a superpower, the historical record offers enough examples of seemingly irrational acts to suggest that this scenario should not be totally discounted.<sup>49</sup>

Ground forces will need nuclear warfighting protection in future campaigns against these emerging nuclear threats since irrational leaders will probably use nuclear weapons against U.S. forces to punish them and to force their withdrawal by attacking the friendly "center of gravity."

From a warfighting standpoint, can the use of TNWS ever be justified by the U.S. President? To answer this question, it is necessary to review the "just war" theory. The "just war" theory consists of the criteria of "*jus ad bellum*" (just resort to war) and of "*jus in bello*" (just use of force). Resorting to war implies both a just cause and a reasonable prospect of success.

The requirement of a just cause implies, first, that the war should be one of self-defense.... The other criterion of a just cause ought also to be attainable, at least in theory: there should be a reasonable prospect of a successful outcome.<sup>50</sup>

Reasonable success could be measured in terms of quickness in ending hostilities as well as in savings in economic resources. However, "it is by no means obvious *a priori* that a

readiness to use, or indeed an actual use of, nuclear weapons by the West could not have these effects."<sup>51</sup> The theory of just use of force implies both discriminate and proportionate use of weapons in carrying out combat operations. Beach posits:

The principle of discrimination rules out any direct intentional attack on noncombatants or nonmilitary targets. The principle of proportionality requires both that the damage resulting from any operation must be proportional to the military ends sought and more demandingly, that the overall costs of the war be proportionate to the good accomplished by conducting it - that is to say, by resisting rather than appeasing, surrendering, accepting defeat, or suing for peace.<sup>52</sup>

Therefore, U.S. use of TNWS should be both discriminate and proportionate with respect to the nuclear threat. United States' TNWS can be justified morally by reducing their yields and improving accuracy to reduce collateral damage, and economically by offsetting the need for large conventional forces and by curtailing losses through early conflict termination, if a strategy based on national interests is adopted.

Would a U.S. President ever authorize the use of TNWS? This is an extremely contentious issue. Whether or not a U.S. President would ever authorize release of TNWS under any circumstances due to potentially egregious political consequences, both domestic and foreign, is subject to opposing views. Morality issues, including the extreme destructiveness of nuclear weapons, escalation to global nuclear war, and an excuse for nonnuclear nations to acquire nuclear weapons technology (if the U.S. were to use a nuclear weapon again) are mentioned as political reasons preventing release of TNWS for warfighting. Morality issues were discussed earlier under "just war" theory, and the use of TNWS with lower yields and high accuracy can be justified morally

morally against a nuclear-capable threat use. Escalation concerns can now be minimized or eliminated because of the warming relations between the FSU and the U.S. The cold war is over, and the paradigm of nuclear escalation merits another look. The FSU and U.S. must consider and plan for regional conflicts against irrational nuclear-capable leaders. The FSU has indicated an interest to participant jointly with the U.S. in the Global Protection Against Limited Strikes program, knowing the proliferation of nuclear weapons and ballistic missile technology places the FSU at extreme security risk. Nuclear weapon proliferation is continuing even if the U.S. never uses a TNWS for warfighting; linkage between U.S. possession or use of TNWS in stimulating further proliferation is difficult to establish.

Furthermore, a U.S. President is highly unlikely to allow U.S. forces to face annihilation if a nation were to use nuclear weapons against those forces. The American people would not stand idly by and allow the destruction of U.S. forces by a renegade regime believing that the use of TNWS could have altered the situation. As recently as January 1991, before Desert Storm was initiated, many from Congress and the general American populace were discussing the use of TNWS to force the withdrawal of Iraqi forces from Kuwait, rather than lose the life of one service member. In writing to Saddam Hussein on 5 January 1991, President Bush, in responding to "unconscionable acts" (like the use of chemical or biological weapons), said "the American people would demand the strongest possible response," and "you and your country will pay a terrible price."<sup>53</sup>

The President did not overtly say that "unconscionable acts" would result in a nuclear attack, but he did not exclude the possibility.<sup>54</sup> The world will never know if President Bush would have authorized nuclear weapons to counter a chemical or biological attack on coalition forces, but based on the reaction of the American people, it seems that many would have wanted retaliation. Saddam Hussein released chemical artillery shells for use by his division commanders. Fortunately, Iraqi division commanders were rational and did not use them. But what if Saddam Hussein had had nuclear weapons?<sup>55</sup>

Assuming a regional threat has a nuclear capability and U.S. political leadership has opted for resorting to war, do TNWS meet the criteria of just use? With improved accuracy and lower select yields to minimize collateral damage, TNWS appear to have a warfighting role. Research and development efforts in nuclear weapon technologies have created enhanced, suppressed and induced radiation weapons. As explained by Rose:

Subkiloton weapons with increased accuracy offer a credible tactical weapon to promote utility as warfighting instruments....current technology is capable of producing nuclear weapons that do not have the destructiveness and radioactivity associated with earlier technology.<sup>56</sup>

For example, the enhanced radiation weapon, or neutron bomb, has low-yield output of blast and heat but releases copious amounts of prompt neutron radiation. This weapon minimizes collateral damage, allowing for lethal radiation doses against military personnel in armored vehicles, buildings or shelters. The suppressed radiation weapon is designed to enhance the blast effects while minimizing radiation output. This weapon

would be effective against area targets such as a nuclear weapon launch or storage site, minimizing radiation fallout if the prevailing winds are in the direction of noncombatants.

Additionally, a suppressed radiation weapon delivered with improved accuracy could be effective against small hardened targets such as buried command and control bunkers.<sup>57</sup> Induced radiation weapons are designed to deny an area for a short period of time, preventing a concentration of forces for offensive operations on a high speed avenue of approach toward friendly forces. This weapon could protect friendly forces from annihilation, particularly when they are most vulnerable, such as after a nuclear attack or during initial sea-to-shore operations. According to Jones:

Nuclear weapons also could be used to rapidly destroy or cripple large physical assets such as hydroelectric and thermal power stations, ports, oil and gas installations, industrial complexes, and communication systems. Conventional weapons could be used to impair or disable such assets too, but the success of conventional missions would be harder to achieve.<sup>58</sup>

In order to ameliorate concerns about escalation control in the event that TNWS may be needed, it is prudent to have an understanding with the FSU beforehand to counter emerging nuclear threats. An expanded "hot line" could be useful in keeping the FSU leadership informed of intentions. The use of a few TNWS does not mean automatic escalation to general nuclear war.<sup>59</sup> However, strategic weapon systems, with their large nuclear weapon yields, should never be considered as a substitute for TNWS because they leave a distinct launch signature, possibly creating angst and doubts within the FSU leadership that could become destabilizing. Rose further states:

Nevertheless, some yet argue that escalation will be difficult, if not impossible, to control after the initial use of nuclear weapons, even subkiloton tactical weapons....The reality of the situation is that the constrained use of these subkiloton weapons in war need not lead to escalation.<sup>60</sup>

In light of recent world events and a warming of relations with the FSU, with proper safeguards such as limiting of yields and improving of accuracies along with direct communication expressing intentions, planning now for the warfighting capability of TNWS in the NMS seems prudent. This will enhance deterrence and possibly warfighting utilization against aggression from nations led by rational or irrational regimes. "There is no such beast as a non-warfighting nuclear deterrent."<sup>61</sup> In addition, TNWS can be used effectively to counter threat nuclear weapons *quid pro quo* in conflict termination, providing further resource savings in manpower, equipment and supplies. However, the notion that a nuclear war could be initiated, conducted, and terminated assumes it could be controlled, resulting in the need for continued functioning of command, control, and communications systems and the strict adherence of field commanders to Washington's directives.<sup>62</sup>

Debate is also ongoing over the future need for TNWS considering the "revolution" in nonnuclear technologies. Highly accurate precision guided munitions (PGM) remarkably demonstrated in Desert Storm have changed the nature and efficacy of bombing operations. Two thousand pound conventional munitions were guided to targets with pinpoint accuracy using laser beams. "In theory, precision guided munitions should allow for the efficient destruction of the full range of ground-, air- and sea-based

targets.<sup>63</sup> As a result, PGM advocates question the need for costly development of combat vehicles including battle tanks, fighter bombers and surface warships.<sup>64</sup> PGM appear to be an appealing, reasonably inexpensive approach to cutting the defense budget, and they should be fully analyzed in a cost analysis methodology. However, Mazarr warns: "China's force, hidden as it is in caves and other inaccessible places, is not susceptible to reliable targeting by NNSW [PGM] or other devices."<sup>65</sup> In order to minimize risk, the defense establishment should have flexibility in warfighting and not have to rely solely on this high technology weapon system. In addition, bunkers can be sufficiently hardened to negate the effects of PGM.<sup>66</sup>

Innovative technologies usually enjoy only limited success because countermeasures are quickly developed to ameliorate their advantage. "The history of technological innovation in warfare is a story of measure and countermeasure, and PGM systems are not immune to this dynamic."<sup>67</sup> The antitank guided missile is an example of the vulnerability of a PGM system to countermeasures. Smoke and reactive armor have been effective in thwarting antitank PGM. Also, flares were effective countermeasures in Vietnam and Lebanon in confusing surface-to-air missiles aimed at fighter aircraft. It is likely that countermeasures to PGM will be developed; therefore, even with PGM, TNWS will still have a deterrent and potential warfighting role to enhance operational art and to minimize risk for deployed forces.

There are possible situations with countries like North Korea, Iran, or Iraq using nuclear weapons (product of proliferation) on coalition forces deployed in a regional war.

The President should have the means (both conventional and TNWS) and the ways (doctrine) to execute LNO consistent with the existing NATO doctrine of "flexible response" to prevent annihilation of coalition forces. Smoke advises:

Although not a unified, precise doctrine, Flexible Response in all versions prominently includes the idea that the United States and its major allies should maintain multiple options for responding to the outbreak of different kinds of conflicts, with forces and strategies appropriate to each kind.<sup>68</sup>

Bad weather, air defense activity, countermeasures or lack of local air superiority may prevent effective use in sufficient quantity of PGM, resulting in the need for one or more accurately placed, aircraft delivered, low-yield TNWS. However, "LNO would be operationally viable only if the United States had a plausible theory of how it could control and dominate later escalation."<sup>69</sup> Therefore, a future agreement with the FSU for potential TNWS use in a limited war should be sought. Since the FSU is surrounded by longtime foes who may soon acquire nuclear weapons, it is cogent for the FSU to conduct negotiations with the U.S. pertaining to the warfighting capability of TNWS.

Is planning for and developing joint doctrine for the warfighting capability of TNWS prudent in supporting our national interests? The FSU will also continue to possess air delivered TNWS, based on the General Secretary's October 1991 response to the President's initiatives; therefore, the Navy and Air Force TNWS will be needed to provide deterrence against potentially emergent FSU and PRC TNWS threats. But, as already discussed, these weapons can also have a new role, that of warfighting. Because of the need to downsize the force and to prepare for regional nuclear contingencies, air

delivered, low-yield TNWS can act as "force multipliers" in limited wars. According to Dunn:

Further, the capability must be developed to provide timely and accurate tactical intelligence about the disposition of hostile nuclear weapons in order to permit the military commanders on the spot to take protective measures on warning of possible use or, if unavoidable, to allow the President to order a preemptive strike against those weapons.<sup>70</sup>

Despite Congressional budget reduction demands, it appears militarily essential for the U.S. Air Force and Navy to retain a TNWS capability for potential warfighting utilization to counter these emerging threats. In order to improve the efficiency of bombing operations, emphasis needs to be placed on integrating conventional and nuclear capabilities by enhancing command and control procedures, damage assessment, real time target acquisition, battle management data processing, and improved warning and attack assessment. Such emphasis will insure a timely, accurate response against fleeting targets of massed personnel and equipment. Smoke also states:

In the heat of battle there may be compelling and urgent reason to take some step to avoid a serious tactical loss. Or a tactical opportunity may present itself which, if not quickly seized, will probably disappear.<sup>71</sup>

Budget reductions should not eliminate TNWS capability for either deterrence or potential warfighting roles.

Do TNWS in a warfighting role complement the principles of war as outlined in Field Manual (FM) 100-5 and support the Army's mission of Deter, Fight, Win? This FM is the Army's keystone guidance for planning and conducting campaigns, major operations, battles, and engagements with the other services and allied forces.<sup>72</sup>

Hypothetical targets requiring nuclear planning and joint doctrine for TNWS strikes include enemy nuclear delivery systems, key command and control elements, support forces, follow-on forces and reserves.<sup>73</sup> Because the Army will soon become nonnuclear with the retirement of its SNF, and with the Navy unable to provide timely warfighting TNWS to Army ground forces, the Air Force will need to hone its skills in training, planning and providing for air-to-ground TNWS fire support, including attacking hostile targets in close proximity to friendly forces. Builder warns:

...close air support has been the most consistently neglected mission of the Air Force. Flying down in the mud instead of up in the blue and taking directions from someone on the ground are encroachments upon the freedom of flight that is so cherished by airmen.<sup>74</sup>

According to FM 100-5 close air support is essential to the success of ground operations:

Close air support enhances land force operations by providing the capability to deliver a wide range of weapons and massed firepower at decisive points. Close air support can surprise the enemy, create opportunities for the maneuver or advance of friendly forces through shock action and concentrated attacks, protect the flanks of friendly forces, blunt enemy offensives, and protect the rear of land forces during retrograde operations.<sup>75</sup>

Low-yield weapons can be highly effective when accurately and timely placed against mobile targets. If the President has granted release authority for LNO strikes for warfighting, TNWS can be extremely effective in attacking "centers of gravity," such as the armed forces or political leadership, thereby undermining the "will" to resist, and can compliment several of the principles of war, including objective, offensive, mass, economy of force, maneuver and surprise. The military objective must include applying

the degree of force necessary to attain the desired political objectives. "A decision to escalate may reflect a change in policy-makers' objectives; or it may reflect merely a fresh urgency or determination to achieve the same objectives."<sup>76</sup> United States' TNWS offer that capability and provide the ground component commander (GCC) freedom of action, or initiative, as outlined in AirLand Battle doctrine.<sup>77</sup>

Are Air Force missions, doctrine, and capabilities supportive of Army AirLand Battle Doctrine? Air Force and Army doctrines reflect the need to integrate forces and operations to achieve success in obtaining this nation's political, economic and military strategic goals. The Air Force states that it is "...fully committed to orchestrating its forces and operations with those of the other Services."<sup>78</sup> Likewise, the Army recognizes the nation's survival depends upon the ability to fight in high, mid, and low intensity conflicts with the other services and allies.<sup>79</sup> An implied requirement in this guidance and reinforced in Joint Pub 1 is the need for joint doctrine to achieve efficiently stated military objectives. "Though neither policy nor strategy, *joint doctrine* deals with the fundamental issue of how best to employ the national military power to achieve strategic ends."<sup>80</sup>

With the need to downsize, services must work more closely together to optimize the efficacy of integrating missions, doctrine and capabilities. This will enhance future national security, while emphasizing risk reduction in achieving the NMS fiscally constrained force structure. There are myriad possibilities for study and analysis in developing LNO for mixes of forces and joint doctrine. Nuclear strategy with options

(great and small) that strains to avoid collateral damage would offer the President flexibility for making decisions.<sup>81</sup>

Building a force structure and joint doctrine to counter future uncertainty is not easy. Therefore, the new force structure and joint doctrine must be versatile to be effective across the operational continuum, fully integrating the capabilities, fire power, command and control, etc. of service assets. If integrated properly,<sup>82</sup> the probability of achieving future economic, political and military goals will be enhanced. But, can the Air Force provide the close air support mission?

The Air Force in the past has tended to place little emphasis on close air support, in general, and TNWS air delivery in support of ground operations, in particular.

Builder states:

Efforts by those outside the Air Force, such as the president and secretary of defense, to have limited nuclear options designed apart from the SIOP have been treated for what they are: assaults upon the citadels of institutional independence and concepts of war.<sup>83</sup>

It is highly likely that with additional budget reductions in the offing, Air Force TNWS air delivery capability<sup>84</sup> will be further degraded, if not canceled. Currently, approximately 5% of training time is devoted to TNWS activities.<sup>85</sup> "The Tactical Air Command is certainly prepared to use them, but shows no particular affection for them."<sup>86</sup> Builder advises:

If the Army does not confront the tradeoffs among those joint and allied forces upon which it is, and will remain, dependent, then the Army will find itself in a gradually worsening situation with respect to its own planning for (and its capacity to meet its obligations to) the national

commitments to the use of force.<sup>87</sup>

However, according to Air Force doctrine, aerospace forces must train in peacetime just like they plan to fight in wartime.<sup>88</sup> Therefore, if the Army strategic leadership believes that TNWS have deterrent and potential warfighting roles, then the Air Force needs to be encouraged to retain its air-delivered nuclear capability as well as to develop jointly the necessary planning, doctrine and training needed to sustain and enhance this capability. Additionally, the Army and Air Force need to develop the necessary command and control mechanisms for providing timely, highly accurate close air support to prevent fratricide and to assist the GCC in executing the principles of AirLand Battle doctrine. "The need for real-time information flow and analysis will increase as military forces become more complex or dispersible and as their reaction times become shorter."<sup>89</sup> Real-time information includes damage assessment and battle management data. The Army needs to pursue this issue so that resources are consistent with doctrine to achieve strategic objectives in the NMS. If the Air Force chooses not to place financial resources into a TNWS close air support capability, then the Army should seek a standoff missile with a new TNWS capability to complement organic aviation assets.

## **CONCLUSION**

Due to uncertainty in the future status of the nuclear stockpiles of the FSU and PRC, as well as the emerging nuclear-capable Third World nations as a result of failures

in the proliferation of nuclear weapons, it is prudent to move to a strategy based on national interests for determining future roles and requirements for TNWS. If adopted, guidance for determining TNWS requirements must be incorporated in the Joint Strategy Review. Retention of TNWS for limited war scenarios makes sense from a strategy based on national interests including political, economic and military rationales. Since nuclear weapons cannot be disinvited and since deterrence has been successful at the strategic and tactical nuclear levels, it follows that maintenance of TNWS at reduced levels is appropriate. Maintaining a diminished stockpile of TNWS in the NMS seems advantageous for deterrence and potential warfighting utilization in protecting and defending national interests using a qualitative *versus* a quantitative methodology of fixed, mobile and maritime targets.

The emerging Third World threat from nations led by irrational leaders suggests the future role of TNWS may assume more warfighting significance. Tactical nuclear weapons have provided a "force multiplier" capability for deterrence as has been demonstrated in NATO for over 40 years against the Soviet threat. Tactical nuclear weapons would now also provide an "economy of force" enhancement in a warfighting role for contingency operations against nuclear-capable irrational zealots.

A strategy based on national interests for determining TNWS requirements offers the President further flexibility in military options in dealing with emerging threats that are not readily identifiable today. Planning for a TNWS warfighting role needs emphasis and inclusion in joint doctrine. Tactical nuclear weapons, supported by joint planning,

doctrine and training, can provide the President with the ways (LNO) in the NMS to protect forces engaged in "limited war." Tactical nuclear weapons can also provide deterrence in the traditional sense against quiescent FSU and PRC threats that may once again emerge into belligerent, expansionist foreign policies. Precision guided munitions do not obviate the need for TNWS because countermeasure technology in the past has offset the initial advantages of innovative warfighting technology. However, to be effective in the NMS, the Army and Air Force must develop the necessary joint planning, doctrine and training for TNWS warfighting capability.

## ENDNOTES

1. U.S. Army War College. Core Curriculum. Academic Year 1992. Course 1. STRATEGIC LEADERSHIP, p. 27.
2. Carl Builder, The Masks of War, p. ix.
3. CJCS Statement before the Committee on Armed Services, U.S. Senate, p. 3.
4. This missile was also being developed for use on dual capable aircraft for close air support and air interdiction missions, and was called short-range attack missile-tactical (SRAM-T).
5. Under the new policy guidance, the Army will become non nuclear when all ground-based SNF are unilaterally retired. Current Army TNWS include both 8-inch and 155mm artillery-fired atomic projectiles (AFAP) and LANCE surface-to-surface missile warheads. AFAP and LANCE systems are the last vestiges of a nuclear-capable Army that spanned almost 40 years of providing deterrence, primarily in the NATO theater. Based upon research, the majority of Army TNWS had little warfighting capability, but they were effective deterrent weapons designed to offset the huge conventional force advantage of the Warsaw Pact. Some of these deterrent TNWS included 280mm artillery cannons that were essentially immobile; Davy Crockett nuclear bazookas with ranges of 2 to 4 km; CORPORAL, SERGEANT, LITTLE JOHN, HONEST JOHN, PERSHING 1A and LANCE surface-to-surface missiles with short ranges and long response times; atomic demolition munitions for destroying point targets in friendly areas; LANCE and AFAP "neutron bomb" TNWS developed for, but never deployed to, NATO because of political repercussions in NATO; and PERSHING II surface-to-surface missiles that were eliminated in the 1987 Intermediate-Range Nuclear Force (INF) treaty.
6. The Navy will have the capability to drop gravity bomb nuclear weapons on targets and to attack targets from a standoff (more survivable) ship platform using TOMAHAWK cruise missiles, after the nuclear warheads (stored in CONUS) are mated to the missiles. The removal of nuclear warheads from TOMAHAWK eliminates a FSU concern that this weapon system should be considered a strategic *versus* a TNWS for negotiation purposes.
7. With elimination of the SRAM-T system, which was designed to attack fixed and mobile targets from a standoff platform, the Air Force will only have the capability to drop gravity bomb nuclear weapons on targets. Battlefield survivability is now an issue since aircraft must fly to the vicinity of their target prior to release of the weapon.

8. For this paper, it is assumed that future TNWS will consist of TOMAHAWK cruise missile delivered nuclear weapons and gravity bombs dropped from aircraft (other than the B52, B1B and B2).

9. Builder, p. 196.

10. During the previous decade the Navy eliminated several TNWS from its arsenal, including ship-to-ship, air-to-surface and surface-to-surface missiles, torpedoes and depth bombs.

11. Amos Jordan, William Taylor, Jr and Lawrence Korb, American National Security, pp. 32-33.

12. Colin Gray, "Deterrence Resurrected: Revisiting Some Fundamentals," p. 15.

13. Jordan, Taylor and Korb, p. 33.

14. Harold Brown, Thinking about National Security: Defense and Foreign Policy in a Dangerous World, p. 96.

15. Jordan, Taylor and Korb, p. 33.

16. Ibid. pp. 33-34.

17. Brown, p. 5.

18. On 6 February 1992, The Washington Post published that Pakistan had announced the capability to build a nuclear weapon.

19. Fred Holroyd, ed. Thinking about Nuclear Weapons: Analysis and Presentations, p. 134.

20. George Bush, "Remarks by the President to the Aspen Institute Symposium," p. 4.

21. Ray Cline, Metastrategy: National Security Memorandum for the President, p. 20.

22. Gray, p. 18.

23. Lewis A. Dunn, Controlling the Bomb, p. 162.

24. For example, U.S. foreign policy was the basis for the 1968 Nuclear Nonproliferation Treaty (NPT) which has been agreed to by 140 nations; the U.S. and Soviet governments

signed the 1972 Strategic Arms Limitations Talks agreement, which constrained the development of anti-missile defenses, the 1987 INF and the 1991 START agreements.

25. Many in the conservative school of thought believe the President's initiatives in unilateral reductions in nuclear weapons are risky and have confounded achievement of arms control objectives. Others have expressed extreme reservations about the Army becoming a nonnuclear service. General Kroesen (Ret), former Commander in Chief Europe, says, "In today's world there is a role for the Army's tactical nuclear systems. They provide the most efficient, cost-effective way to employ massive firepower on the battlefield." For further reading, see his article, "Limbo Status of Tactical Nukes Leaves Serious Readiness Gap," in Army Magazine, May 1991, pp. 12-14.

26. Capabilities-based and threat-based strategies are bifurcated approaches to achieve national security policy objectives. A capabilities-based strategy has been suggested as a way to cope with the uncertainty associated with less-defined regional threats *versus* a clearly discernable Soviet Union (threat-based strategy) menace. The former NMS was based on a specified threat, given warning time, "automatic" responses, etc. In concept, a capabilities-based strategy uses a "kit bag" approach of various forces, equipment, and munitions (capabilities) that would be available to draw upon, providing a wide variety of flexible response options depending upon the nature of the crisis. The options would entail both warfighting and nonwarfighting capabilities. Tactical nuclear weapon systems, based upon political, economic, and military national interests, are compatible with a capabilities-based strategy and would augment the "kit bag."

27. Daniel Kaufman, Jeffrey McKittrick, and Thomas Leney, eds. U.S. National Security: A Framework for Analysis, p. 6.

28. *Ibid.*, p. 7.

29. Joint Pub 1, p. 2.

30. Kaufman, McKittrick, and Leney, p. 7.

31. Cline, p. 38.

32. William Tow, Encountering the Dominant Player: U.S. Extended Deterrence Strategy in the Asia-Pacific, p. 31.

33. It is possible that the removal of U.S. TNWS from the peninsula may ultimately lead to a reduction of North Korean power and to closer ties with South Korea. However, this is highly unlikely! President Kim Il Sung has demonstrated behavior that is erratic at best and irrational at worst. It is well known that North Korea sponsors international terrorism and

has been positively linked with destroying a civilian South Korean airliner and with bombing a meeting of diplomats in Rangoon, Burma. There are other examples of state-sponsored terrorism, but these two acts amply demonstrate violation of the "just war" theory for policy-makers in that noncombatants were intentionally killed and injured.

34. Don Oberdorfer, "N. Korea Seen Closer to A-Bomb," p. A26.

35. *Ibid.*

36. Or, South Korea may unilaterally conduct an air strike to remove the plant, similar to the Israeli action in 1981 at Osirak, Iraq. This could initiate another Korean War!

37. Today, it is impossible to determine precisely the derived economic benefits of tactical nuclear weapons in offsetting conventional force structure because of the problems associated with understanding the scope of, and the costs attributable to, environmental cleanup and storage of radioactive and toxic material wastes resulting from the manufacturing and retirement of nuclear weapons. It is extremely uncertain if this country will ever again produce a nuclear weapon because of environmental and safety problems identified at the Rocky Flats plant in Colorado, a facility that manufactures a key plutonium component used in nuclear weapons. There are also costs associated with storage and security, command and control, training of personnel, and manpower that could have been used in other programs. Strategic leaders will need to review the cost/benefit analysis. Data should be available in classified documents.

38. Barry Bleckman and Edward Luttwak, Global Security, p. 29.

39. Subsequently, an arms race did ensue between the U.S. and the Soviet Union, as the Soviets attempted to match and surpass U.S. nuclear capabilities. This arms race cost the U.S. enormously because of the research, development and procurement activities needed to counter the Soviet threat. Eventually parity of nuclear forces was mutually recognized in the late sixties, and mutually assured destruction became the U.S. strategic deterrent nuclear policy.

40. Jeffrey Record, NATO's Theater Nuclear Force Modernization Program: The Real Issues, pp. 13-14.

41. The Boston Study Group, The Price of Defense: A New Strategy for Military Spending, p. 216.

42. Neutron bomb TNWS deployments were not allowed in NATO because they possessed too much warfighting *versus* deterrent utility, raising political concerns that a tactical nuclear war could be waged and controlled in NATO without placing the U.S. and Soviet homelands at nuclear risk for destruction.

43. Depending upon the political objectives, the spectrum of conflict generally runs from low intensity to global nuclear warfare.

44. William O'Brien, Military Strategy: Theory and Application, p. 228.

45. Richard Smoke, War: Controlling Escalation, p. viii.

46. Record, p. 20.

47. Barry Buzan, An Introduction to Strategic Studies, p. 171.

48. Charles Kegley, Jr. and Kenneth Schwab, ed., After the Cold War, p. 168.

49. Rodney Jones, Small Nuclear Forces, pp. 62-63.

50. Kegley and Schwab, p. 42.

51. Ibid., p. 43.

52. Ibid.

53. McGeorge Bundy, "Nuclear Weapons in the Gulf," p. 84.

54. Ibid.

55. The President would have had little time to respond with TNWS if Saddam Hussein had used nuclear weapons on coalition forces or Israel during Desert Shield/Storm. The following are two hypothetical scenarios that could have forced the President with a Hobson's choice: either use TNWS to avert military disaster or to prevent horizontal escalation and massive Iraqi noncombatant death and destruction.

a. Iraqi radio communications were rarely used because transmissions could be tracked and targeted by coalition forces. Therefore, Iraqi forces extensively relied on buried wire for command and control (C2) between Baghdad and forces in the field. Buried wire is essentially immune from the effects of electromagnetic pulse (EMP) generated in atmospheric bursts of nuclear weapons. EMP is similar to a surge of microwave energy traveling at the speed of light, can propagate for hundreds of miles away from the point of detonation and is capable of destroying electronic equipment that is not specifically "hardened" against its effects.

Saddam Hussein could have been very effective in destroying coalition C2 equipment and procedures, first by instructing his units in the field to turn off all passive radios and to remove their antenna, and second by targeting a SCUD or several SCUDs with nuclear weapons over coalition forces and detonating the weapons outside PATRIOT range, which is a point defense system. The EMP effects could have severely damaged, if not destroyed,

coalition forces C2 including aircraft electronics in the theater. The EMP effects would have varied depending upon range from burst, yield of the weapon, and atmospheric conditions. Coalition ground combat forces would probably have lost all C2, tracking, and targeting capability.

If Saddam Hussein then ordered (using buried wire) an offensive to attack coalition forces (his armor would have had extant radio C2 and his air forces could have been brought forth from "hardened" shelters), the President would have had to risk another "Dunkirk" on an enormous scale, or worse, annihilation of coalition forces because of their inability to coordinate defensive efforts and to target Iraqi forces. The use of U.S. TNWS would have been paramount in preventing this military and political disaster; using TOMAHAWK cruise missiles from submerged submarines since dual capable aircraft would probably not have had C2 capability, the President could have attacked the Iraqi military "center of gravity."

b. Another possibility would have been for Saddam Hussein to detonate a nuclear weapon over Israel using a SCUD, and again, outside the PATRIOT range. Saddam Hussein could have then threatened to attack Tel Aviv with a nuclear weapon if the U.S. did not withdraw its forces. Based upon research, it is believed Israel possesses 100-200 nuclear weapons, and knowing that many Israeli aircraft are in hardened shelters (probably also "hardened" to EMP effects), Israeli leadership, facing potential nuclear annihilation, could have threatened the President either to act in removing the SCUD threat, or to accept unilateral nuclear destruction of Iraq in retaliation by using its nuclear-capable aircraft and/or ballistic missiles.

Based upon the fact that coalition forces could not find all the SCUD launchers during Desert Storm, the President would have had to decide whether or not to attack the known SCUD launch "areas" with low-yield TNWS, destroying "soft targets" such as SCUD launchers in the process. Low-yield TNWS could be effective for a radius of one or two miles from point of detonation in attacking those launchers that could NOT be pinpointed for attack by conventional munitions. The author believes the President would have opted to prevent horizontal escalation and subsequent destruction of Iraq and its noncombatants by ordering use of TNWS. If not, the Arab world would have condemned the U.S. for failing to restrain the Israeli attack, and this failure could have been the seminal event in uniting them against U.S. forces and in imperiling achievement of U.S. national interests in the Middle East.

56. John Rose, Military Strategy: Theory and Application, pp. 335, 337.

57. Ibid., p. 338.

58. Jones, p. 49.

59. Kaufman, McKittrick and Leney, p. 114.

60. Rose, p. 339.

61. Gray, p. 17.
62. Ian Clark, Nuclear Past, Nuclear Present, p. 115.
63. Richard Cohen and Peter Wilson, Superpowers in Economic Decline: U.S. Strategy for the Transcentury Era, p. 183.
64. Ibid.
65. Michael J. Mazarr, START and the Future of Deterrence, p. 204.
66. Thomas F. Ramos, "The Future of Theater Nuclear Forces," p. 43.
67. Colin and Wilson, p. 183.
68. Smoke, p. 12.
69. Holroyd, p. 200.
70. Dunn, p. 161.
71. Smoke, p. 26.
72. U.S. Army Field Manual 100-5, p. i.
73. Ibid., p. 45
74. Builder, pp. 131-132.
75. U.S. Army Field Manual 100-5, p. 49.
76. Smoke, p. 4.
77. Tactical nuclear weapons can also provide the GCC a resource for superior combat power at the decisive place and time, providing inferior forces the flexibility for defensive or offensive operations. They can provide a means to reduce risks in support of operations where minimum force is employed in "economy of force" theaters, those other than the theater of focus. Tactical nuclear weapons, when delivered in a responsive and accurate manner, can also provide the GCC flexibility in reacting to unforeseen circumstances and offer maneuverability advantages to maximize strength. From a military standpoint, TNWS provide flexibility in achieving military objectives. The policy of flexible response used in NATO is prudent and should be exportable to regional contingencies with nuclear threats.  
To control operations in offensive and defensive maneuvers, the GCC needs counter

air, air interdiction and close air support to execute the principles of AirLand Battle doctrine. Using initiative, the GCC sets or changes the terms of battle to obtain freedom of action; using agility - the ability of friendly forces to act faster than the enemy - the GCC seizes and holds the initiative to shape the battlefield; creating depth, the GCC extends operations in space, time, and resources to win; and orchestrating synchronization, the GCC arranges battlefield activities in time, space and purpose to produce maximum combat power at the decisive place and time. Control of combat operations, shaping the battlefield, and fire and maneuver are some considerations of operational art used by the GCC in achieving operational objectives and in anticipating counters to expected threat responses to friendly actions in battle. Intrinsic in the success of AirLand Battle is the need for timely, accurate response from the Air Force in supporting the GCC.

78. A White Paper, The Air Force and U.S. National Security: Global Reach - Global Power, p. 4.
79. U.S. Army Field Manual 100-5, p. 1.
80. Joint Pub 1, p. 5.
81. Colin Gray, "Nuclear Strategy: What is true, What is false, What is arguable?" p. 25.
82. Army Airland Battle and Air Force doctrines are compatible. Air Force doctrine transcends AirLand Battle operations in the theater of war and includes three specified missions providing for counter air, air interdiction and close air support. Counter air support mandates the need to gain control of the aerospace environment (air superiority); air interdiction delays, disrupts, diverts or destroys the threat's military potential before it can decisively engage friendly ground forces; and close air support attacks targets in close proximity to friendly ground forces. These three missions, if accomplished, directly support and complement the GCC's goal of controlling close, deep, and rear operations in AirLand Battle.
83. Builder, p. 136.
84. The Air Force has several aircraft capable of delivering TNWS in support of AirLand Battle, including the F-4, F-15, F-16, and F-111. The F-4 is employed in an air-to-ground role for close air support and air interdiction; it is being replaced by F-15s and F-16s. The F-15 is employed in air-to-air and limited air-to-ground roles. The F-16 is employed as a multi-role fighter: air-to-air; air-to-ground. The F-111 is primarily employed in an air interdiction role, attacking deep, well-defended targets. In analyzing the expected capabilities of the Air Force to support AirLand Battle doctrine, it appears the F-15, F-16 and F-111, as demonstrated in Desert Storm, are fully capable of supporting the air

interdiction mission of attacking fixed targets.

85. Interview with AWC student who is an F-16 pilot.

86. Builder, p. 196.

87. Ibid., pp. 160-161.

88. Draft Air Force Manual 1-1, p. 18.

89. Jones, p. 90.

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